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Differing Clinical Characteristics Among Black and White Patients Referred for Treatment of Pulmonary Hypertension

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Background: A recent review of death certificates from the Center for Disease Control and Prevention revealed that black men and women have a substantially higher mortality from primary pulmonary hypertension than whites. Furthermore, this discrepancy has widened over the past two decades and the reason for this remains unknown.

Methods: We reviewed the baseline clinical information, echocardiograms, and hemodynamic characteristics of 91 patients (69 whites and 22 blacks) with pulmonary hypertension referred to a tertiary medical center for vasodilator testing prior to initiation of definitive therapy. All patients had pulmonary vasodilator response assessed with 40 ppm of inhaled nitric oxide (iNO).

Results: Though black patients tended to be younger (49 ± 12 vs. 56 ± 14 years of age, $p=0.063$), black and white patients were similar in gender (18% vs. 22% female), underlying diagnosis (~59% vs. 58% carrying a diagnosis of primary pulmonary hypertension), and baseline NYHA function class (2.8 vs. 2.9). Echocardiograms revealed larger right ventricles ($p<0.001$) with more extensive hypocontractility ($p=0.006$) and greater tricuspid regurgitation (3.1 ± 1.2 vs. 2.2 ± 1.2 , $p=0.004$) in black patients. Hemodynamics were notable for higher mean right atrial pressures (14 ± 7 vs. 10 ± 6 mm Hg, $p=0.046$) in black patients despite similar mean pulmonary pressures (51 ± 12 vs. 46 ± 15 mm Hg, $p=0.151$). The mean % reduction in pulmonary pressures with iNO was greater in white patients but did not reach statistical significance (17% vs. 12%, $p=0.126$).

Conclusion: In a group of pulmonary hypertension patients referred for vasodilator testing, black patients appeared to have more advanced pulmonary hypertension with greater evidence of end-organ damage by echocardiography. This suggests either more rapid progression of disease or delayed diagnosis and/or referral in blacks with pulmonary hypertension and may explain the discrepancy in mortality seen between blacks and whites with this disorder.

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QRS Duration Predicts Survival in Patients With Pulmonary Arterial Hypertension

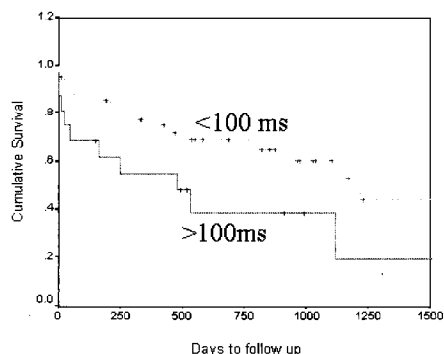
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Pulmonary Arterial Hypertension (PH) is a progressive disease associated with right ventricular (RV) remodeling, systolic dysfunction and death. Both incomplete and complete right bundle branch block are frequently observed on surface electrocardiograms (EKG) in PH patients. QRS and QTc duration are directly related to mortality in patients (pts) with left ventricular (LV) systolic dysfunction. Whether these EKG intervals influence outcome in pts with RV failure due to PH is not known.

Methods: We prospectively evaluated EKG and clinical outcomes in 70 PH pts (Mean age 48.5 ± 11.6 years, 81.7% female, LVEF $55 \pm 5\%$, NYHA Class III/IV 56/44%, Primary PH 66%, Secondary PH 33%) treated with chronic epoprostenol (E) therapy. QRS and QTc were measured at baseline (prior to E therapy) and pts were followed for 824 ± 527 days (range 1-1868 days).

Results: Right bundle branch block was incomplete in 44 (63%) and complete in 9 (13%) pts. Demographic variables were comparable in pts with QRS duration <100 ms and >100 ms or QTc duration <450 ms or >450 ms. In followup, 21 pts (29.6%) died and 13 (16.6%) underwent transplantation. One, 2 and 4 year transplant free survival for QRS <100 / >100 ms was 74/55/44% and 65/38/19% ($p=0.04$) and for QTc <450 / >450 ms was 75/68/45% and 53/55/40% ($p=0.5$) respectively.

Conclusion: As seen with LV systolic dysfunction, in pts with RV systolic dysfunction due to PH, a QRS duration >100 ms is associated with poorer survival. QTc interval >450 ms, on the other hand, does not appear to affect survival.



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Prognostic Value of Brain Natriuretic Peptide and Cardiac Troponin T in Patients With Confirmed Pulmonary Embolism: Changes After Treatment

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Background- The aim of the present study was to assess the changes in plasma levels of the brain natriuretic peptide (BNP) and cardiac troponin T (cTnT) before and after treatment in patients with acute PE. **Methods-** BNP and cTnT levels were measured in 31 patients (age $56(16)$) with acute PE as diagnosed by high probability lung scintigraphy or pulmonary angiography. Twenty seven healthy age-matched volunteers served as controls (age $42(12)$). Blood from all patients was obtained during the first hour of presentation. All patients were treated with intravenous admission of heparin. After 30 days of follow-up, regardless of additional treatment, the second blood samples were acquired. None of the patients had renal impairment, atrial arrhythmia, preexisting RV pathology or left ventricular dysfunction.

Results- Patients with acute PE had significantly higher BNP plasma levels and cTnT than the controls. (BNP 48.2 ± 78.3 pmol/L versus 3.1 ± 3.7 pmol/L; $p=0.004$ and cTnT 0.16 ± 0.017 pmol/L versus 0.1 ± 0 pmol/L; $p<0.05$). Out of 31 patients, the 6 patients who died during the follow up had significantly higher plasma BNP levels at presentation compared to the survivors (BNP 129.5 ± 139.1 versus 28.7 ± 39.8 ; $p=0.003$). In the group of survivors the plasma BNP levels after 30 days were significantly lower compared to the first visit (BNP 10.3 ± 15.7 pmol/L versus 28.7 ± 39.8 pmol/L; $p=0.02$ and ANP 7.0 ± 8.0 pmol/L versus 10.3 ± 15.4 pmol/L; $p=ns$). cTnT showed similar results. **Conclusions-** These results showed a significant decrease of BNP and cTnT after treatment of patients with acute PE. There was also a significant relationship between presenting BNP and cTnT levels, and 30-day mortality in patients with acute PE.

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Right Atrial Thrombus: A Comparison Between Freely Mobile and Partially Mobile Thrombus

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Background: Mobile right atrial thrombus (RAT) is a potentially fatal echocardiographic finding. The distinction between freely mobile and partially mobile RAT may influence treatment strategy and outcome. An optimal treatment strategy has yet to be established.

Methods: A total of 77 patients with mobile RAT between January 1, 1984 and July 15, 2002 were studied. Freely mobile RAT, characterized by a typical "popcorn" or serpiginous appearance, was defined as type I if a major portion of the mass moved freely within the right atrium and crossed the tricuspid valve. Partially mobile RAT, with a broad attachment to an intracardiac structure or foreign body, was defined as type II. Clinical history and diagnostic studies were reviewed to document treatment choice and outcome. Mortality is reported as within 14 days in-hospital from all causes.

Results: Type I RAT was identified in 16 males and 15 females with a mean age of 59 ± 17.1 years and type II RAT was identified in 24 males and 22 females with a mean age of 51 ± 25.1 years. Mortality in patients with type I RAT was higher than those with type II RAT. (32.3% versus 8.7%, $p=0.009$). Table 1

Treatment strategy and outcome

	Heparin		Thrombolytics		Surgery		None	
	No.	Mortality	No.	Mortality	No.	Mortality	No.	Mortality
Type I	20	7 (35%)	8	2 (25%)	2	0 (0%)	1	1 (100%)
Type II	28	3 (10.7%)	4	0 (0%)	6	0 (0%)	8	1 (12.5%)

Conclusion: 1) Mortality is significantly higher in patients with type I RAT; 2) Patients with type I RAT should be managed emergently with either thrombolytics or surgical intervention; whereas patients with type II RAT may initially be managed with standard anticoagulation followed by thrombolytics or surgical intervention for persistent thrombus or unstable hemodynamics.

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High Incidence of Left Atrial Appendage Thrombus in End-Stage Renal Disease Patients Receiving Maintenance Hemodialysis

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Background: Intracardiac sources of cerebrovascular ischemic events reportedly account for 15 to 20% of the strokes in the general population. However, no study has determined the incidence of intracardiac thrombus formation in hemodialysis patients. In this study, we determined the incidence of intracardiac thrombus formation in maintenance hemodialysis patients.

Methods: Transesophageal echocardiography was performed in 215 patients with end-stage renal disease undergoing maintenance hemodialysis (125 males, 90 females; mean age: 60 ± 9 years). Patients with a current or previous history of atrial fibrillation or with cardiovascular disease were excluded from this study.

Results: Thrombus was found in the left atrial appendage in 71/215 patients (33%). Based on multiple logistic regression analyses, the relative risk of the presence of thrombus was increased in patients on chronic antiplatelet therapy (odds ratio: 4.268) and in those with diabetes mellitus and a low hematocrit (0.3 or less; odds ratio: 7.173). Other clinical parameters including gender, age, duration of hemodialysis, blood pressure, left ventricular dimension, smoking habit, or type of anticoagulation drug used during dialysis